



1.

SEQUENCE LISTING

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ROBERTS, FIONA  
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LYONS, RUSSELL  
MUI, ERNEST  
MACK, DOUG  
SAMUEL, BENJAMIN  
GORNICKI, PIOTR  
ZUTHER, ELLEN

<120> ANTIMICROBIAL AGENTS, DIAGNOSTIC REAGENTS, AND VACCINES  
BASED ON UNIQUE APICOMPLEXAN PARASITE COMPONENTS

<130> 19338-90966

<140> 09/631,594

<141> 2000-08-03

<150> PCT/US00/11478

<151> 2000-04-27

<150> PCT/US97/12497

<151> 1997-07-18

<160> 83

<170> PatentIn Ver. 2.1

<210> 1

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<212> PRT

<213> Plasmodium falciparum

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Asn Asn Glu Asp Gln Ile Leu Asn Ser Thr Lys Gly Phe Met Pro Pro  
35 40 45

Lys Asn Asp Lys Asn Phe Asn Asn Ile Asp Asp Tyr Asn Val Thr Phe  
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Asn Asn Asn Glu Glu Lys Leu Leu  
65 70

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<213> Toxoplasma gondii

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 Arg Thr Thr Ser Arg His Glu Glu Glu Val Glu Arg Gly  
 35 40 45

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<211> 72

<212> PRT

<213> Zea mays

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Met Ala Ala Leu Ala Thr Ser Gln Leu Val Ala Thr Arg Ala Gly Leu  
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 20 25 30  
 Arg Gly Ala Arg Ala Ser Ala Ala Asp Thr Leu Ser Met Arg Thr  
 35 40 45  
 Ser Ala Arg Ala Ala Pro Arg His Gln Gln Gln Ala Arg Arg Gly Gly  
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 Arg Phe Pro Ser Leu Val Cys  
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<220>

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19

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atgaacacga cgctctctc

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<210> 11  
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<210> 17

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<210> 18

<211> 18

<212> DNA

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18

<210> 19

<211> 19

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<400> 21  
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agctattggg tggatc

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<210> 26

<211> 22

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ttgaatcggtt gaatgataag ac

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<210> 27

<211> 21

<212> DNA

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<223> Description of Artificial Sequence: Primer

<400> 27

tttttagatca gcaatcaaac c

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<210> 28

<211> 22

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Primer

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aaatttttat ctccatactt tg

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<210> 29

<211> 25

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Primer

<400> 29

gaaggaatag tcaatgtggtt tttat

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<223> Description of Artificial Sequence: Primer

<400> 30  
gtattttacc aagattacca ccc

23

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<220>

<223> Description of Artificial Sequence: Primer

<400> 31  
cccccaacac tatgtcg

17

<210> 32  
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<223> Description of Artificial Sequence: Primer

<400> 32  
cagtgggcaa aataaaga

18

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ccagtgggca aaataa

16

<210> 34  
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ggaagagaaa cagccac

17



<210> 35  
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<400> 35  
 tgctgctggg gcgtg

15

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<400> 36  
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 1 5

<210> 37  
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 <212> DNA  
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<400> 37  
 cggttgatg tcggtttcgc t

21

<210> 38  
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 <223> Description of Artificial Sequence: Primer

<400> 38  
 tggtgggtga gtacgcaaga gtgg

24

<210> 39  
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<223> Description of Artificial Sequence: Primer

<400> 39

cccatcgacg atatgttcga g

21

<210> 40

<211> 22

<212> DNA

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<223> Description of Artificial Sequence: Primer

<400> 40

cgtagaacgc cgttgtccat tg

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<210> 41

<211> 25

<212> DNA

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<223> Description of Artificial Sequence: Primer

<400> 41

ttgccgttct ggaaagctag taaga

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<210> 42

<211> 21

<212> DNA

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<223> Description of Artificial Sequence: Primer

<400> 42

gcaaacgctg gtcctcaatg t

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<210> 43

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 43

gtttccagat caccacacagt cttgg

25

<210> 44

<211> 25

<212> DNA

<213> Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Primer

&lt;400&gt; 44

gagcaaacc aatgaggaag aagtg

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&lt;210&gt; 45

&lt;211&gt; 2312

&lt;212&gt; DNA

&lt;213&gt; Toxoplasma gondii

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (162)..(1769)

&lt;400&gt; 45

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ccgctcggtc cgtgcatct cctcacattt cttgcagtca g atg tct tcc tat gga 176  
Met Ser Ser Tyr Gly  
1 5gcc gct ctg cgc ata cac act ttc ggt gaa tct cac ggc tca gcc gtt 224  
Ala Ala Leu Arg Ile His Thr Phe Gly Glu Ser His Gly Ser Ala Val  
10 15 20ggg tgt ata atc gac ggg ctg cct cct cgc ctc cct ctt tct gtc gaa 272  
Gly Cys Ile Ile Asp Gly Leu Pro Pro Arg Leu Pro Leu Ser Val Glu  
25 30 35gat gtt cag cct caa tta aat cgc aga aga ccc ggc caa ggg cct ctc 320  
Asp Val Gln Pro Gln Leu Asn Arg Arg Arg Pro Gly Gln Gly Pro Leu  
40 45 50tcg acg cag cgg aga gag aaa gat cga gtc aac ata ctc tcc ggt gtt 368  
Ser Thr Gln Arg Arg Glu Lys Asp Arg Val Asn Ile Leu Ser Gly Val  
55 60 65gaa gac gga tat aca ctc ggt act ccc ctg gcg atg ctc gtc tgg aat 416  
Glu Asp Gly Tyr Thr Leu Gly Thr Pro Leu Ala Met Leu Val Trp Asn  
70 75 80 85gaa gac cgg cgg ccc cag gaa tac cac gcc ctc gcg aca gtc ccg cgt 464  
Glu Asp Arg Arg Pro Gln Glu Tyr His Ala Leu Ala Thr Val Pro Arg  
90 95 100cca ggt cac ggg gat ttc acc tac cat gca aag tac cac att cac gcg 512  
Pro Gly His Gly Asp Phe Thr Tyr His Ala Lys Tyr His Ile His Ala  
105 110 115aaa agc ggg ggc ggt cgg agc agc gcg cgg gag act ttg gcg cgc gtc 560  
Lys Ser Gly Gly Gly Arg Ser Ser Ala Arg Glu Thr Leu Ala Arg Val  
120 125 130

gcc gct gga gca gtc gtt gag aag tgg cta ggc atg cac tac ggc acc	608
Ala Ala Gly Ala Val Val Glu Lys Trp Leu Gly Met His Tyr Gly Thr	
135 140 145	
agc ttc aca gct tgg gtc tgt cag gtt ggt gat gtc tct gtg ccc cga	656
Ser Phe Thr Ala Trp Val Cys Gln Val Gly Asp Val Ser Val Pro Arg	
150 155 160 165	
tcg ctg cga aga aag tgg gag cgg cag ccg cca act cgc caa gac gtc	704
Ser Leu Arg Arg Lys Trp Glu Arg Gln Pro Pro Thr Arg Gln Asp Val	
170 175 180	
gat cgc ctt ggc gtg gtc cgc gtg agc cca gat gga acc aca ttt ctg	752
Asp Arg Leu Gly Val Val Arg Val Ser Pro Asp Gly Thr Thr Phe Leu	
185 190 195	
gac gcg aac aac cgc ctt tac gac gag cga gga gag gaa ctg gtc gag	800
Asp Ala Asn Asn Arg Leu Tyr Asp Glu Arg Gly Glu Glu Leu Val Glu	
200 205 210	
gag gaa gac aaa gcc agg cgt cgg ctt ctt ttc gga gtc gac aac ccg	848
Glu Glu Asp Lys Ala Arg Arg Arg Leu Leu Phe Gly Val Asp Asn Pro	
215 220 225	
acg cca gga gaa aca gtg att gag acc agg tgc ccg tgc ccc tcc aca	896
Thr Pro Gly Glu Thr Val Ile Glu Thr Arg Cys Pro Cys Pro Ser Thr	
230 235 240 245	
gct gtt cgc atg gct gtg aaa atc aac cag acc cga tct ctg ggc gat	944
Ala Val Arg Met Ala Val Lys Ile Asn Gln Thr Arg Ser Leu Gly Asp	
250 255 260	
tcg att ggc gga tgc atc tcc ggt gca atc gtg cgg cca ccg ctg ggc	992
Ser Ile Gly Gly Cys Ile Ser Gly Ala Ile Val Arg Pro Pro Leu Gly	
265 270 275	
ctc ggc gag ccg tgt ttc gac aaa gtg gag gcg gag ctg gcg aag gcg	1040
Leu Gly Glu Pro Cys Phe Asp Lys Val Glu Ala Glu Leu Ala Lys Ala	
280 285 290	
atg atg tcg ctg cct gct acg aaa ggg ttt gag att ggc cag ggc ttt	1088
Met Met Ser Leu Pro Ala Thr Lys Gly Phe Glu Ile Gly Gln Gly Phe	
295 300 305	
gcg agt gtc acg ttg cga ggc agc gag cac aac gac cgc ttc att ccc	1136
Ala Ser Val Thr Leu Arg Gly Ser Glu His Asn Asp Arg Phe Ile Pro	
310 315 320 325	
ttc gag aga gcg tcg tgt tca ttc tcg gaa tca gcc gcg agc acg atc	1184
Phe Glu Arg Ala Ser Cys Ser Phe Ser Glu Ser Ala Ala Ser Thr Ile	
330 335 340	
aag cat gaa aga gat ggg tgt tca gct gct aca ctg tca cgg gag cga	1232
Lys His Glu Arg Asp Gly Cys Ser Ala Ala Thr Leu Ser Arg Glu Arg	
345 350 355	

gcg agt gac ggt aga aca act tct cga cat gaa gag gag gtg gaa agg 1280  
Ala Ser Asp Gly Arg Thr Thr Ser Arg His Glu Glu Glu Val Glu Arg  
360 365 370

ggg cgg gag cgc ata cag cgc gat acc ctc cat gtt act ggt gta gat 1328  
Gly Arg Glu Arg Ile Gln Arg Asp Thr Leu His Val Thr Gly Val Asp  
375 380 385

cag caa aac ggc aac tcc gaa gat tca gtt cga tac act tcc aaa tca 1376  
Gln Gln Asn Gly Asn Ser Glu Asp Ser Val Arg Tyr Thr Ser Lys Ser  
390 395 400 405

gag gcg tcc atc aca agg ctg tgc gga aat gct gcc tct gga ggt gct 1424  
Glu Ala Ser Ile Thr Arg Leu Ser Gly Asn Ala Ala Ser Gly Gly Ala  
410 415 420

cca gtc tgc cgc att cca cta ggc gag gga gta cgg atc agg tgt gga 1472  
Pro Val Cys Arg Ile Pro Leu Gly Glu Gly Val Arg Ile Arg Cys Gly  
425 430 435

agc aac aac gct ggt gga acg ctc gca ggc att aca tca gga gag aac 1520  
Ser Asn Asn Ala Gly Gly Thr Leu Ala Gly Ile Thr Ser Gly Glu Asn  
440 445 450

att ttt ttt cgg gtg gcc ttc aag cct gtt tct tcc atc ggc ttg gaa 1568  
Ile Phe Phe Arg Val Ala Phe Lys Pro Val Ser Ser Ile Gly Leu Glu  
455 460 465

caa gaa act gca gac ttt gct ggt gaa atg aac cag cta gct gtg aaa 1616  
Gln Glu Thr Ala Asp Phe Ala Gly Glu Met Asn Gln Leu Ala Val Lys  
470 475 480 485

ggc cgc cac gat ccc tgc gtc ctt ccg cga gcc cct cct ctg gtt gag 1664  
Gly Arg His Asp Pro Cys Val Leu Pro Arg Ala Pro Pro Leu Val Glu  
490 495 500

agc atg gct gcc ctt gtg att ggc gat ctg tgc ctc cgc cag cgc gcc 1712  
Ser Met Ala Ala Leu Val Ile Gly Asp Leu Cys Leu Arg Gln Arg Ala  
505 510 515

cgg gaa ggg ccg cac ccc ctt ctc gtc ctt cct caa cac agt ggt tgc 1760  
Arg Glu Gly Pro His Pro Leu Leu Val Leu Pro Gln His Ser Gly Cys  
520 525 530

cca tct tgc tgagctctac cttgttccaa aaacttgtgc atacggggta 1809  
Pro Ser Cys  
535

caccagggttc ctcacaagga gaatcgtgag gcggtgactg gccagcgcca cagattgctg 1869

ttcatgcaca agaaagaaaa cagcgcattt ccgccacaac ccagctgcat gaagttgctg 1929

gatatcgttc cggcgggtgct cggccttctt ctctacgctc gcgatgatac gtgcgcagct 1989

tcataagct ccttttgcac tgtagtggtc tcccaacaga accctttgtg gaagggaatc 2049

tggtctcacg cttgcaggag agagttcgcc tttgttcacg aaataacgaa gccaaagcagc 2109

tcagttgcat tcagcctgca cacagttgca ttcagcctgc acactaaaca cgggcgaaat 2169  
 cgtcgctga tatgtagttc ttcggttgct acggttaattg tcgtcgtgtt tgaacaacta 2229  
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 <213> Toxoplasma gondii

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 His Gly Ser Ala Val Gly Cys Ile Ile Asp Gly Leu Pro Pro Arg Leu  
 20 25 30  
 Pro Leu Ser Val Glu Asp Val Gln Pro Gln Leu Asn Arg Arg Arg Pro  
 35 40 45  
 Gly Gln Gly Pro Leu Ser Thr Gln Arg Arg Glu Lys Asp Arg Val Asn  
 50 55 60  
 Ile Leu Ser Gly Val Glu Asp Gly Tyr Thr Leu Gly Thr Pro Leu Ala  
 65 70 75 80  
 Met Leu Val Trp Asn Glu Asp Arg Arg Pro Gln Glu Tyr His Ala Leu  
 85 90 95  
 Ala Thr Val Pro Arg Pro Gly His Gly Asp Phe Thr Tyr His Ala Lys  
 100 105 110  
 Tyr His Ile His Ala Lys Ser Gly Gly Gly Arg Ser Ser Ala Arg Glu  
 115 120 125  
 Thr Leu Ala Arg Val Ala Ala Gly Ala Val Val Glu Lys Trp Leu Gly  
 130 135 140  
 Met His Tyr Gly Thr Ser Phe Thr Ala Trp Val Cys Gln Val Gly Asp  
 145 150 155 160  
 Val Ser Val Pro Arg Ser Leu Arg Arg Lys Trp Glu Arg Gln Pro Pro  
 165 170 175  
 Thr Arg Gln Asp Val Asp Arg Leu Gly Val Val Arg Val Ser Pro Asp  
 180 185 190  
 Gly Thr Thr Phe Leu Asp Ala Asn Asn Arg Leu Tyr Asp Glu Arg Gly  
 195 200 205  
 Glu Glu Leu Val Glu Glu Glu Asp Lys Ala Arg Arg Arg Leu Leu Phe  
 210 215 220

Gly Val Asp Asn Pro Thr Pro Gly Glu Thr Val Ile Glu Thr Arg Cys  
 225 230 235 240  
 Pro Cys Pro Ser Thr Ala Val Arg Met Ala Val Lys Ile Asn Gln Thr  
 245 250 255  
 Arg Ser Leu Gly Asp Ser Ile Gly Gly Cys Ile Ser Gly Ala Ile Val  
 260 265 270  
 Arg Pro Pro Leu Gly Leu Gly Glu Pro Cys Phe Asp Lys Val Glu Ala  
 275 280 285  
 Glu Leu Ala Lys Ala Met Met Ser Leu Pro Ala Thr Lys Gly Phe Glu  
 290 295 300  
 Ile Gly Gln Gly Phe Ala Ser Val Thr Leu Arg Gly Ser Glu His Asn  
 305 310 315 320  
 Asp Arg Phe Ile Pro Phe Glu Arg Ala Ser Cys Ser Phe Ser Glu Ser  
 325 330 335  
 Ala Ala Ser Thr Ile Lys His Glu Arg Asp Gly Cys Ser Ala Ala Thr  
 340 345 350  
 Leu Ser Arg Glu Arg Ala Ser Asp Gly Arg Thr Thr Ser Arg His Glu  
 355 360 365  
 Glu Glu Val Glu Arg Gly Arg Glu Arg Ile Gln Arg Asp Thr Leu His  
 370 375 380  
 Val Thr Gly Val Asp Gln Gln Asn Gly Asn Ser Glu Asp Ser Val Arg  
 385 390 395 400  
 Tyr Thr Ser Lys Ser Glu Ala Ser Ile Thr Arg Leu Ser Gly Asn Ala  
 405 410 415  
 Ala Ser Gly Gly Ala Pro Val Cys Arg Ile Pro Leu Gly Glu Gly Val  
 420 425 430  
 Arg Ile Arg Cys Gly Ser Asn Asn Ala Gly Gly Thr Leu Ala Gly Ile  
 435 440 445  
 Thr Ser Gly Glu Asn Ile Phe Phe Arg Val Ala Phe Lys Pro Val Ser  
 450 455 460  
 Ser Ile Gly Leu Glu Gln Glu Thr Ala Asp Phe Ala Gly Glu Met Asn  
 465 470 475 480  
 Gln Leu Ala Val Lys Gly Arg His Asp Pro Cys Val Leu Pro Arg Ala  
 485 490 495  
 Pro Pro Leu Val Glu Ser Met Ala Ala Leu Val Ile Gly Asp Leu Cys  
 500 505 510  
 Leu Arg Gln Arg Ala Arg Glu Gly Pro His Pro Leu Leu Val Leu Pro  
 515 520 525

Gln His Ser Gly Cys Pro Ser Cys  
530 535

<210> 47  
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<212> PRT  
<213> Synechocystis sp.

<400> 47

Met Gly Asn Thr Phe Gly Ser Leu Phe Arg Ile Thr Thr Phe Gly Glu  
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Ser His Gly Gly Gly Val Gly Val Ile Ile Asp Gly Cys Pro Pro Arg  
20 25 30  
Leu Glu Ile Ser Pro Glu Glu Ile Gln Val Asp Leu Asp Arg Arg Arg  
35 40 45  
Pro Gly Gln Ser Lys Ile Thr Thr Pro Arg Lys Glu Ala Asp Gln Cys  
50 55 60  
Glu Ile Leu Ser Gly Val Phe Glu Gly Lys Thr Leu Gly Thr Pro Ile  
65 70 75 80  
Ala Ile Leu Val Arg Asn Lys Asp Ala Arg Ser Gln Asp Tyr Asn Glu  
85 90 95  
Met Ala Val Lys Tyr Arg Pro Ser His Ala Asp Ala Thr Tyr Glu Ala  
100 105 110  
Lys Tyr Gly Ile Arg Asn Trp Gln Gly Gly Gly Arg Ser Ser Ala Arg  
115 120 125  
Glu Thr Ile Gly Arg Val Ala Ala Gly Ala Ile Ala Lys Lys Ile Leu  
130 135 140  
Ala Gln Phe Asn Gly Val Glu Ile Val Ala Tyr Val Lys Ser Ile Gln  
145 150 155 160  
Asp Ile Glu Ala Thr Val Asp Ser Asn Thr Val Thr Leu Glu Gln Val  
165 170 175  
Glu Ser Asn Ile Val Arg Cys Pro Asp Glu Glu Cys Ala Glu Lys Met  
180 185 190  
Ile Glu Arg Ile Asp Gln Val Leu Arg Gln Lys Asp Ser Ile Gly Gly  
195 200 205  
Val Val Glu Cys Ala Ile Arg Asn Ala Pro Lys Gly Leu Gly Glu Pro  
210 215 220  
Val Phe Asp Lys Leu Glu Ala Asp Leu Ala Lys Ala Met Met Ser Leu  
225 230 235 240  
Pro Ala Thr Lys Gly Phe Glu Phe Gly Ser Gly Phe Ala Gly Thr Leu  
245 250 255



Leu Thr Gly Ser Gln His Asn Asp Glu Tyr Tyr Leu Asp Glu Ala Gly  
                   260                                  265                                  270  
 Glu Trp Arg Thr Arg Thr Asn Arg Ser Gly Gly Val Gln Gly Gly Ile  
                   275                                  280                                  285  
 Ser Asn Gly Glu Pro Ile Ile Met Arg Ile Ala Phe Lys Pro Thr Ala  
                   290                                  295                                  300  
 Thr Ile Gly Gln Glu Gln Lys Thr Val Ser Asn Ile Gly Glu Glu Thr  
                   305                                  310                                  315                                  320  
 Thr Leu Ala Ala Lys Gly Arg His Asp Pro Cys Val Leu Pro Arg Ala  
                                   325                                  330                                  335  
 Val Pro Met Val Glu Ala Met Ala Ala Leu Val Leu Cys Asp His Leu  
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 Leu Arg Phe Gln Ala Gln Cys Lys Thr Leu  
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                   20                                  25                                  30  
 Arg Phe Pro Thr His Arg Ser Gln Pro Lys Arg Leu Glu Ile Gln Ala  
                   35                                  40                                  45  
 Ala Gly Asn Thr Phe Gly Asn Tyr Phe Arg Val Thr Thr Phe Gly Glu  
                   50                                  55                                  60  
 Ser His Gly Gly Gly Val Gly Cys Ile Ile Asp Gly Cys Pro Pro Arg  
                   65                                  70                                  75                                  80  
 Leu Pro Leu Ser Glu Ser Asp Met Gln Val Glu Leu Asp Arg Arg Arg  
                                   85                                  90                                  95  
 Pro Gly Gln Ser Arg Ile Thr Thr Pro Arg Lys Glu Thr Asp Thr Cys  
                   100                                  105                                  110  
 Lys Ile Ser Ser Gly Thr Ala Asp Gly Leu Thr Thr Gly Ser Pro Ile  
                   115                                  120                                  125  
 Lys Val Glu Val Pro Asn Thr Asp Gln Arg Gly Asn Asp Tyr Ser Glu  
                   130                                  135                                  140  
 Met Ser Leu Ala Tyr Arg Pro Ser His Ala Asp Ala Thr Tyr Asp Phe  
                   145                                  150                                  155                                  160

Lys Tyr Gly Val Arg Ser Val Gln Gly Gly Arg Ser Ser Ala Arg  
 165 170 175  
 Glu Thr Ile Gly Arg Val Ala Ala Gly Ala Val Ala Lys Lys Ile Leu  
 180 185 190  
 Lys Leu Tyr Ser Gly Thr Glu Ile Leu Ala Tyr Val Ser Gln Val His  
 195 200 205  
 Asn Val Val Leu Pro Glu Asp Leu Val Asp Asn Gln Ile Val Thr Leu  
 210 215 220  
 Glu Gln Ile Glu Ser Asn Ile Val Arg Cys Pro Asn Pro Glu Tyr Ala  
 225 230 235 240  
 Glu Lys Met Ile Gly Ala Ile Asp Tyr Val Arg Val Arg Gly Asp Ser  
 245 250 255  
 Val Gly Gly Val Val Thr Cys Ile Val Arg Asn Val Pro Arg Gly Leu  
 260 265 270  
 Gly Thr Pro Val Phe Asp Lys Leu Glu Ala Glu Leu Ala Lys Ala Cys  
 275 280 285  
 Met Ser Leu Pro Ala Thr Lys Gly Phe Glu Phe Gly Ser Gly Phe Ala  
 290 295 300  
 Gly Thr Phe Met Thr Gly Ser Glu His Asn Asp Glu Phe Phe Met Asp  
 305 310 315 320  
 Glu His Asp Gln Ile Arg Thr Lys Thr Asn Arg Ser Gly Gly Ile Gln  
 325 330 335  
 Gly Gly Ile Ser Asn Gly Glu Ile Ile Asn Met Arg Val Ala Phe Lys  
 340 345 350  
 Pro Thr Ser Thr Ile Ala Arg Lys Gln His Thr Val Ser Arg Asp Lys  
 355 360 365  
 His Glu Thr Glu Leu Ile Ala Arg Gly Arg His Asp Pro Cys Val Val  
 370 375 380  
 Pro Arg Ala Val Pro Met Val Glu Ala Met Val Ala Leu Val Leu Val  
 385 390 395 400  
 Asp Gln Leu Met Thr Gln Tyr Ala Gln Cys Met Leu Phe Pro Val Asn  
 405 410 415  
 Leu Thr Leu Gln Glu Pro Leu Gln Pro Ser Thr Thr Lys Ser Ala  
 420 425 430

&lt;210&gt; 49

&lt;211&gt; 432

&lt;212&gt; PRT

&lt;213&gt; Neurospora crassa

&lt;400&gt; 49

Met Ser Thr Phe Gly His Tyr Phe Arg Val Thr Thr Tyr Gly Glu Ser  
 1 5 10 15  
 His Cys Lys Ser Val Gly Cys Ile Val Asp Gly Val Pro Pro Gly Met  
 20 25 30  
 Glu Leu Thr Glu Asp Asp Ile Gln Pro Gln Met Thr Arg Arg Arg Pro  
 35 40 45  
 Gly Gln Ser Ala Ile Thr Thr Pro Arg Asp Glu Lys Asp Arg Val Ile  
 50 55 60  
 Ile Gln Ser Gly Thr Glu Phe Gly Val Thr Leu Gly Thr Pro Ile Gly  
 65 70 75 80  
 Met Leu Val Met Asn Glu Asp Gln Pro Pro Lys Asp Tyr Gly Asn Lys  
 85 90 95  
 Thr Met Asp Ile Tyr Pro Arg Pro Ser His Ala Asp Trp Thr Tyr Leu  
 100 105 110  
 Glu Lys Tyr Gly Val Lys Ala Ser Ser Gly Gly Gly Arg Ser Ser Ala  
 115 120 125  
 Arg Glu Thr Ile Gly Arg Val Ala Ala Gly Ala Ile Ala Glu Lys Tyr  
 130 135 140  
 Leu Lys Pro Arg Tyr Gly Val Glu Ile Val Ala Phe Val Ser Ser Val  
 145 150 155 160  
 Gly Ser Glu His Leu Phe Pro Pro Thr Ala Glu His Pro Ser Pro Ser  
 165 170 175  
 Thr Asn Pro Glu Phe Leu Lys Leu Val Asn Ser Ile Thr Arg Glu Thr  
 180 185 190  
 Val Asp Ser Phe Leu Pro Val Arg Cys Pro Asp Ala Glu Ala Asn Lys  
 195 200 205  
 Arg Met Glu Asp Leu Ile Thr Lys Phe Arg Asp Asn His Asp Ser Ile  
 210 215 220  
 Gly Gly Thr Val Thr Cys Val Ile Arg Asn Val Pro Ser Gly Leu Gly  
 225 230 235 240  
 Glu Pro Ala Phe Asp Lys Leu Glu Ala Met Leu Ala His Ala Met Leu  
 245 250 255  
 Ser Ile Pro Ala Thr Lys Gly Phe Glu Val Gly Ser Gly Phe Gly Gly  
 260 265 270  
 Cys Glu Val Pro Gly Ser Ile His Asn Asp Pro Phe Val Ser Ala Glu  
 275 280 285  
 Asn Thr Glu Ile Pro Pro Ser Val Ala Ala Ser Gly Ala Ala Arg Asn  
 290 295 300

Gly Ile Pro Arg Pro Lys Leu Thr Thr Lys Thr Asn Phe Ser Gly Gly  
 305 310 315 320

Ile Gln Gly Gly Ile Ser Asn Gly Ala Pro Ile Tyr Phe Arg Val Gly  
 325 330 335

Phe Lys Pro Ala Ala Thr Ile Gly Gln Glu Gln Thr Thr Ala Thr Tyr  
 340 345 350

Asp Gly Thr Ser Glu Gly Val Leu Ala Ala Lys Gly Arg His Asp Pro  
 355 360 365

Ser Val Val Pro Arg Ala Val Pro Ile Val Glu Ala Met Ala Ala Leu  
 370 375 380

Val Ile Met Asp Ala Val Leu Ala His Glu Ala Arg Val Thr Ala Lys  
 385 390 395 400

Ser Leu Leu Pro Pro Leu Lys Gln Thr Ile Asn Ser Gly Lys Asp Thr  
 405 410 415

Val Gly Asn Gly Val Ser Glu Asn Val Gln Glu Ser Asp Leu Ala Gln  
 420 425 430

<210> 50

<211> 357

<212> PRT

<213> Haemophilus influenza

<400> 50

Met Ala Gly Asn Thr Ile Gly Gln Leu Phe Arg Val Thr Thr Phe Gly  
 1 5 10 15

Glu Ser His Gly Ile Ala Leu Gly Cys Ile Val Asp Gly Val Pro Pro  
 20 25 30

Asn Leu Glu Leu Ser Glu Lys Asp Ile Gln Pro Asp Leu Asp Arg Arg  
 35 40 45

Lys Pro Gly Thr Ser Arg Tyr Thr Thr Pro Arg Arg Glu Asp Asp Glu  
 50 55 60

Val Gln Ile Leu Ser Gly Val Phe Glu Gly Lys Thr Thr Gly Thr Ser  
 65 70 75 80

Ile Gly Met Ile Ile Lys Asn Gly Asp Gln Arg Ser Gln Asp Tyr Gly  
 85 90 95

Asp Ile Lys Asp Arg Phe Arg Pro Gly His Ala Asp Phe Thr Tyr Gln  
 100 105 110

Gln Lys Tyr Gly Ile Arg Asp Tyr Arg Gly Gly Gly Arg Ser Ser Ala  
 115 120 125

Arg Glu Thr Ala Met Arg Val Ala Ala Gly Ala Ile Ala Lys Lys Tyr  
 130 135 140

Leu Arg Glu His Phe Gly Ile Glu Val Arg Gly Phe Leu Ser Gln Ile  
 145 150 155 160  
 Gly Asn Ile Lys Ile Ala Pro Gln Lys Val Gly Gln Ile Asp Trp Glu  
 165 170 175  
 Lys Val Asn Ser Asn Pro Phe Phe Cys Pro Asp Glu Ser Ala Val Glu  
 180 185 190  
 Lys Phe Asp Glu Leu Ile Arg Glu Leu Lys Lys Glu Gly Asp Ser Ile  
 195 200 205  
 Gly Ala Lys Leu Thr Val Ile Ala Glu Asn Val Pro Val Gly Leu Gly  
 210 215 220  
 Glu Pro Val Phe Asp Arg Leu Asp Ala Asp Leu Ala His Ala Leu Met  
 225 230 235 240  
 Gly Ile Asn Ala Val Lys Gly Val Glu Ile Gly Asp Gly Phe Ala Val  
 245 250 255  
 Val Glu Gln Arg Gly Ser Glu His Arg Asp Glu Met Thr Pro Asn Gly  
 260 265 270  
 Phe Glu Ser Asn His Ala Gly Gly Ile Leu Gly Gly Ile Ser Ser Gly  
 275 280 285  
 Gln Pro Ile Ile Ala Thr Ile Ala Leu Lys Pro Thr Ser Ser Ile Thr  
 290 295 300  
 Ile Pro Gly Arg Ser Ile Asn Leu Asn Gly Glu Ala Val Glu Val Val  
 305 310 315 320  
 Thr Lys Gly Arg His Asp Pro Cys Val Gly Ile Arg Ala Val Pro Ile  
 325 330 335  
 Ala Glu Ala Met Val Ala Ile Val Leu Leu Asp His Leu Leu Arg Phe  
 340 345 350  
 Lys Ala Gln Cys Lys  
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<210> 51  
 <211> 376  
 <212> PRT  
 <213> *Saccharomyces cerevisiae*

<400> 51  
 Met Ser Thr Phe Gly Lys Leu Phe Arg Val Thr Thr Tyr Gly Glu Ser  
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 His Cys Lys Ser Val Gly Cys Ile Val Asp Gly Val Pro Pro Gly Met  
 20 25 30  
 Ser Leu Thr Glu Ala Asp Ile Gln Pro Gln Leu Thr Arg Arg Arg Pro  
 35 40 45

Gly Gln Ser Lys Leu Ser Thr Pro Arg Asp Glu Lys Asp Arg Val Glu  
 50 55 60  
 Ile Gln Ser Gly Thr Glu Phe Gly Lys Thr Leu Gly Thr Pro Ile Ala  
 65 70 75 80  
 Met Met Ile Lys Asn Glu Asp Gln Arg Pro His Asp Tyr Ser Asp Met  
 85 90 95  
 Asp Lys Phe Pro Arg Pro Ser His Ala Asp Phe Thr Tyr Ser Glu Lys  
 100 105 110  
 Tyr Gly Ile Lys Ala Ser Ser Gly Gly Gly Arg Ala Ser Ala Arg Glu  
 115 120 125  
 Thr Ile Gly Arg Val Ala Ser Gly Ala Ile Ala Glu Lys Phe Leu Ala  
 130 135 140  
 Gln Asn Ser Asn Val Glu Ile Val Ala Phe Val Thr Gln Ile Gly Glu  
 145 150 155 160  
 Ile Lys Met Asn Arg Asp Ser Phe Asp Pro Glu Phe Gln His Leu Leu  
 165 170 175  
 Asn Thr Ile Thr Arg Glu Lys Val Asp Ser Met Gly Pro Ile Arg Cys  
 180 185 190  
 Pro Asp Ala Ser Val Ala Gly Leu Met Val Lys Glu Ile Glu Lys Tyr  
 195 200 205  
 Arg Gly Asn Lys Asp Ser Ile Gly Gly Val Val Thr Cys Val Val Arg  
 210 215 220  
 Asn Leu Pro Thr Gly Leu Gly Glu Pro Cys Phe Asp Lys Leu Glu Ala  
 225 230 235 240  
 Met Leu Ala His Ala Met Leu Ser Ile Pro Ala Ser Lys Gly Phe Glu  
 245 250 255  
 Ile Gly Ser Gly Phe Gln Gly Val Ser Val Pro Gly Ser Lys His Asn  
 260 265 270  
 Asp Pro Phe Tyr Phe Glu Lys Glu Thr Asn Arg Leu Arg Thr Lys Thr  
 275 280 285  
 Asn Asn Ser Gly Gly Val Gln Gly Gly Ile Ser Asn Gly Glu Asn Ile  
 290 295 300  
 Tyr Phe Ser Val Pro Phe Lys Ser Val Ala Thr Ile Ser Gln Glu Gln  
 305 310 315 320  
 Lys Thr Ala Thr Tyr Asp Gly Glu Glu Gly Ile Leu Ala Ala Lys Gly  
 325 330 335  
 Arg His Asp Pro Ala Val Thr Pro Arg Ala Ile Pro Ile Val Glu Ala  
 340 345 350

Met Thr Ala Leu Val Leu Ala Asp Ala Leu Leu Ile Gln Lys Ala Arg  
 355 360 365

Asp Phe Ser Arg Ser Val Val His  
 370 375

<210> 52  
 <211> 82  
 <212> PRT  
 <213> Zea mays

<400> 52  
 Met Ala Ala Leu Ala Thr Ser Gln Leu Val Ala Thr Arg Ala Gly Leu  
 1 5 10 15  
 Gly Val Pro Asp Ala Ser Thr Phe Arg Arg Gly Ala Ala Gln Gly Leu  
 20 25 30  
 Arg Gly Ala Arg Ala Ser Ala Ala Ala Asp Thr Leu Ser Met Arg Thr  
 35 40 45  
 Ser Ala Arg Ala Ala Pro Arg His Gln Gln Gln Ala Arg Arg Gly Gly  
 50 55 60  
 Arg Phe Pro Ser Leu Val Val Cys Ala Ser Ala Gly Met Asn Val Val  
 65 70 75 80

Phe Val

<210> 53  
 <211> 45  
 <212> PRT  
 <213> Toxoplasma gondii

<400> 53  
 Ser Cys Ser Phe Ser Glu Ser Ala Ala Ser Thr Ile Lys His Glu Arg  
 1 5 10 15  
 Asp Gly Cys Ser Ala Ala Thr Leu Ser Arg Glu Arg Ala Ser Asp Gly  
 20 25 30  
 Arg Thr Thr Ser Arg His Glu Glu Glu Val Glu Arg Gly  
 35 40 45

<210> 54  
 <211> 1837  
 <212> DNA  
 <213> Plasmodium falciparum

<220>  
 <221> CDS  
 <222> (105)..(1685)

<400> 54  
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ggg act tta tta aaa gta aca tcc tac gga gaa agt cat ggg aaa gct	164								
Gly Thr Leu Leu Lys Val Thr Ser Tyr Gly Glu Ser His Gly Lys Ala									
5 10 15 20									
att ggg tgt gtg atc gat ggg ttt tta tcc aat ata gaa ata aat ttt	212								
Ile Gly Cys Val Ile Asp Gly Phe Leu Ser Asn Ile Glu Ile Asn Phe									
25 30 35									
gat tta ata caa aaa caa tta gat aga cga aga cca aat caa tca aaa	260								
Asp Leu Ile Gln Lys Gln Leu Asp Arg Arg Arg Pro Asn Gln Ser Lys									
40 45 50									
cta act agt aat aga aac gaa aaa gat aaa ctt gtt ata ctt tca gga	308								
Leu Thr Ser Asn Arg Asn Glu Lys Asp Lys Leu Val Ile Leu Ser Gly									
55 60 65									
ttt gat gaa aat aaa aca tta ggt aca cct att aca ttt tta ata tat	356								
Phe Asp Glu Asn Lys Thr Leu Gly Thr Pro Ile Thr Phe Leu Ile Tyr									
70 75 80									
aat gaa gat att aaa aaa gaa gat tat aat tct ttt ata aat att cct	404								
Asn Glu Asp Ile Lys Lys Glu Asp Tyr Asn Ser Phe Ile Asn Ile Pro									
85 90 95 100									
aga cca gga cat gga gat tat acc tat ttt atg aaa tat cat gtt aaa	452								
Arg Pro Gly His Gly Asp Tyr Thr Tyr Phe Met Lys Tyr His Val Lys									
105 110 115									
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Asn Lys Ser Gly Ser Ser Arg Phe Ser Gly Arg Glu Thr Ala Thr Arg									
120 125 130									
gtt gct gct ggg gcg tgc att gaa caa tgg ctt tat aaa tct tat aat	548								
Val Ala Ala Gly Ala Cys Ile Glu Gln Trp Leu Tyr Lys Ser Tyr Asn									
135 140 145									
tgt tct att gtt agt tat gta cat tca gtt ggg aat ata aag ata cct	596								
Cys Ser Ile Val Ser Tyr Val His Ser Val Gly Asn Ile Lys Ile Pro									
150 155 160									
gaa caa gtc agc aaa gaa ttg gaa aat aaa aat cca ccc tca aga gat	644								
Glu Gln Val Ser Lys Glu Leu Glu Asn Lys Asn Pro Pro Ser Arg Asp									
165 170 175 180									
tta gta gat tct tat gga acc gtt aga tat aat gaa aaa gaa aaa ata	692								
Leu Val Asp Ser Tyr Gly Thr Val Arg Tyr Asn Glu Lys Glu Lys Ile									
185 190 195									
ttt atg gat tgt ttt aat aga ata tat gat atg aat gct tct atg tta	740								
Phe Met Asp Cys Phe Asn Arg Ile Tyr Asp Met Asn Ala Ser Met Leu									
200 205 210									



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aac acg tat ata aat gta aaa act aat gaa tgt aat ata aat cag gtt Asn Thr Tyr Ile Asn Val Lys Thr Asn Glu Cys Asn Ile Asn Gln Val 230 235 240	836
gat aat aat cat aac aat tat att aat gat aag gat aac act ttt aat Asp Asn Asn His Asn Asn Tyr Ile Asn Asp Lys Asp Asn Thr Phe Asn 245 250 255 260	884
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cct cct ata ggt att gga gaa cct att ttt gac aaa ttg gaa gct gag Pro Pro Ile Gly Ile Gly Glu Pro Ile Phe Asp Lys Leu Glu Ala Glu 310 315 320	1076
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atc ttc ata cct gta gaa aat atg tct aca aaa aaa gaa agt gat tta Ile Phe Ile Pro Val Glu Asn Met Ser Thr Lys Lys Glu Ser Asp Leu 360 365 370	1220
tta tat gat gat aaa ggt gaa tgt aaa aat atg tct tat cat tca acg Leu Tyr Asp Asp Lys Gly Glu Cys Lys Asn Met Ser Tyr His Ser Thr 375 380 385	1268
att caa aat aat gag gat caa ata tta aat tca act aaa gga ttt atg Ile Gln Asn Asn Glu Asp Gln Ile Leu Asn Ser Thr Lys Gly Phe Met 390 395 400	1316
cct cct aaa aat gac aag aat ttt aat aat att gat gat tac aat gtt Pro Pro Lys Asn Asp Lys Asn Phe Asn Asn Ile Asp Asp Tyr Asn Val 405 410 415 420	1364
acg ttt aat aat aat gaa gaa aaa tta tta att aca aaa aca aat aat Thr Phe Asn Asn Asn Glu Lys Leu Leu Ile Thr Lys Thr Asn Asn 425 430 435	1412

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 Cys Gly Gly Ile Leu Ala Gly Ile Ser Thr Gly Asn Asn Ile Val Phe  
 440 445 450  
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 Arg Ser Ala Ile Lys Pro Val Ser Ser Ile Gln Ile Glu Lys Glu Thr  
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 Ser Asp Phe Tyr Gly Asn Met Cys Asn Leu Lys Val Gln Gly Arg His  
 470 475 480  
 gat agc tgt att tta cca aga tta cca ccc att att gaa gca tct tct 1604  
 Asp Ser Cys Ile Leu Pro Arg Leu Pro Pro Ile Ile Glu Ala Ser Ser  
 485 490 495 500  
 tca atg gtt ata gga gat tta ata tta cga caa ata tca aag tat gga 1652  
 Ser Met Val Ile Gly Asp Leu Ile Leu Arg Gln Ile Ser Lys Tyr Gly  
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 Asp Lys Lys Leu Pro Thr Leu Phe Arg Asn Met  
 520 525  
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 catttcgtct ac 1837

&lt;210&gt; 55

&lt;211&gt; 527

&lt;212&gt; PRT

&lt;213&gt; Plasmodium falciparum

&lt;400&gt; 55

Met Ser Thr Tyr Gly Thr Leu Leu Lys Val Thr Ser Tyr Gly Glu Ser  
 1 5 10 15  
 His Gly Lys Ala Ile Gly Cys Val Ile Asp Gly Phe Leu Ser Asn Ile  
 20 25 30  
 Glu Ile Asn Phe Asp Leu Ile Gln Lys Gln Leu Asp Arg Arg Arg Pro  
 35 40 45  
 Asn Gln Ser Lys Leu Thr Ser Asn Arg Asn Glu Lys Asp Lys Leu Val  
 50 55 60  
 Ile Leu Ser Gly Phe Asp Glu Asn Lys Thr Leu Gly Thr Pro Ile Thr  
 65 70 75 80  
 Phe Leu Ile Tyr Asn Glu Asp Ile Lys Lys Glu Asp Tyr Asn Ser Phe  
 85 90 95  
 Ile Asn Ile Pro Arg Pro Gly His Gly Asp Tyr Thr Tyr Phe Met Lys  
 100 105 110

Tyr His Val Lys Asn Lys Ser Gly Ser Ser Arg Phe Ser Gly Arg Glu  
 115 120 125  
 Thr Ala Thr Arg Val Ala Ala Gly Ala Cys Ile Glu Gln Trp Leu Tyr  
 130 135 140  
 Lys Ser Tyr Asn Cys Ser Ile Val Ser Tyr Val His Ser Val Gly Asn  
 145 150 155 160  
 Ile Lys Ile Pro Glu Gln Val Ser Lys Glu Leu Glu Asn Lys Asn Pro  
 165 170 175  
 Pro Ser Arg Asp Leu Val Asp Ser Tyr Gly Thr Val Arg Tyr Asn Glu  
 180 185 190  
 Lys Glu Lys Ile Phe Met Asp Cys Phe Asn Arg Ile Tyr Asp Met Asn  
 195 200 205  
 Ala Ser Met Leu Lys Thr Asp Glu Tyr Asn Lys Asn Thr Leu Thr Ile  
 210 215 220  
 Pro Ser Ile Asp Asn Thr Tyr Ile Asn Val Lys Thr Asn Glu Cys Asn  
 225 230 235 240  
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 Thr Arg Cys Pro His Pro Tyr Thr Ala Val Gln Ile Cys Ser Tyr Ile  
 275 280 285  
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 290 295 300  
 Ile Ile Gln Asn Pro Pro Ile Gly Ile Gly Glu Pro Ile Phe Asp Lys  
 305 310 315 320  
 Leu Glu Ala Glu Leu Ala Lys Met Ile Leu Ser Ile Pro Pro Val Lys  
 325 330 335  
 Gly Ile Glu Phe Gly Ser Gly Phe Asn Gly Thr Tyr Met Phe Gly Ser  
 340 345 350  
 Met His Asn Asp Ile Phe Ile Pro Val Glu Asn Met Ser Thr Lys Lys  
 355 360 365  
 Glu Ser Asp Leu Leu Tyr Asp Asp Lys Gly Glu Cys Lys Asn Met Ser  
 370 375 380  
 Tyr His Ser Thr Ile Gln Asn Asn Glu Asp Gln Ile Leu Asn Ser Thr  
 385 390 395 400  
 Lys Gly Phe Met Pro Pro Lys Asn Asp Lys Asn Phe Asn Asn Ile Asp  
 405 410 415

Asp Tyr Asn Val Thr Phe Asn Asn Asn Glu Glu Lys Leu Leu Ile Thr  
                   420                                  425                                  430  
 Lys Thr Asn Asn Cys Gly Gly Ile Leu Ala Gly Ile Ser Thr Gly Asn  
                   435                                  440                                  445  
 Asn Ile Val Phe Arg Ser Ala Ile Lys Pro Val Ser Ser Ile Gln Ile  
                   450                                  455                                  460  
 Glu Lys Glu Thr Ser Asp Phe Tyr Gly Asn Met Cys Asn Leu Lys Val  
                   465                                  470                                  475                                  480  
 Gln Gly Arg His Asp Ser Cys Ile Leu Pro Arg Leu Pro Pro Ile Ile  
                                   485                                  490                                  495  
 Glu Ala Ser Ser Ser Met Val Ile Gly Asp Leu Ile Leu Arg Gln Ile  
                                   500                                  505                                  510  
 Ser Lys Tyr Gly Asp Lys Lys Leu Pro Thr Leu Phe Arg Asn Met  
                   515                                  520                                  525

&lt;210&gt; 56

&lt;211&gt; 5883

&lt;212&gt; DNA

&lt;213&gt; Toxoplasma gondii

&lt;400&gt; 56

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<210> 57

<211> 1499

<212> DNA

<213> *Toxoplasma gondii*

<400> 57

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<210> 58

<211> 495

<212> PRT

<213> *Toxoplasma gondii*

<400> 58

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Arg Leu Ser Arg Pro Pro Ser Val Val Asn Ser Phe Ala Glu Leu Pro
20          25          30

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Ala Ser His Leu Phe Ser Leu Pro Phe Trp Lys Val Ser Lys Gly Pro  
 35 40 45  
 Pro Ser Arg Ala Val Asp Arg Ser Ala Met Thr Ile Glu Phe Asp Val  
 50 55 60  
 Pro Lys Ser Phe Cys Phe Asp Phe Arg Lys Glu Cys Leu Glu Pro Leu  
 65 70 75 80  
 Ser Val Ser Thr Ser Phe Phe Val Ala Leu Pro Arg Arg Leu Pro Val  
 85 90 95  
 Leu Val Ser Ala Phe Arg Leu Thr Thr Ser Leu His Ser His Ser Met  
 100 105 110  
 Ala Ser Arg Ala Pro His Ala Gly Gln Arg Leu Arg Ser Leu Met Gln  
 115 120 125  
 Lys Lys Cys Val Met Leu Pro Gly Ala Tyr Asn Gly Leu Thr Ala Arg  
 130 135 140  
 Leu Ala Ala Glu Ala Gly Phe Glu Gly Val Tyr Val Ser Gly Ala Ala  
 145 150 155 160  
 Leu Ser Ala Cys Gln Gly Val Pro Asp Ile Gly Ile Leu Gly Leu Glu  
 165 170 175  
 Asp Phe Thr Arg Val Ile Ser Gln Ala Ala Ser Val Thr Ser Leu Pro  
 180 185 190  
 Val Leu Ala Asp Ala Asp Thr Gly Phe Gly Gly Pro Glu Met Val Arg  
 195 200 205  
 Arg Thr Val Phe Ala Tyr Asn Gln Ala Gly Ala Ala Gly Leu His Ile  
 210 215 220  
 Glu Asp Gln Arg Leu Pro Lys Lys Cys Gly His Leu Glu Gly Lys Gln  
 225 230 235 240  
 Leu Val Ser Ile Glu Glu Met Glu Glu Lys Ile Lys Ala Ala Ala Ala  
 245 250 255  
 Ala Ser Gln Asp Cys Ser Asn Gly Asp Phe Ile Ile Cys Ala Arg Thr  
 260 265 270  
 Asp Ala Arg Ser Val Asp Gly Leu Asp Ala Ala Val Glu Arg Ala Val  
 275 280 285  
 Arg Tyr Thr Ala Ala Gly Ala Asp Met Leu Phe Pro Glu Gly Leu Glu  
 290 295 300  
 Thr Glu Val Arg Gly Gly Lys Lys Asn Gln Arg Lys Lys Ala Ser Val  
 305 310 315 320  
 Leu Glu Arg Gln Arg Glu Ala Val Ala Leu Glu Glu Phe Gln Ala Phe  
 325 330 335

Ala His Ala Leu Ala Val Leu Pro Gly Lys Ala Pro Phe Gly Gly Pro  
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Tyr Leu Leu Ala Asn Met Thr Glu Phe Gly Lys Thr Pro Ile Met Glu  
 355 360 365

Leu Ser Thr Phe Glu Gly Leu Gly Tyr His Cys Val Ile Tyr Pro Val  
 370 375 380

Ser Pro Leu Arg Val Ala Met Lys Ser Val Lys Gly Met Leu Val Asp  
 385 390 395 400

Leu Arg Lys Asn Gly Ser Val Gly His Ser Leu Glu Lys Met Tyr Thr  
 405 410 415

Arg Gln Glu Leu Tyr Ser Thr Leu His Tyr Arg Pro Glu Gly Thr Trp  
 420 425 430

Thr Tyr Pro Ser Ala Ser Val Cys Met Asp Lys Ala Val Glu Asp Thr  
 435 440 445

Glu Ala Gly Val Ser Gly Ser Ala Phe Ser Phe Ser Arg Leu Val Ser  
 450 455 460

Pro Ile Gln Lys Thr Met Leu Thr Asp Glu Lys Gln Lys Phe Leu Tyr  
 465 470 475 480

Leu Asn Val Lys Lys Lys Lys Lys Asn Ser Arg Gly Gly Pro Val  
 485 490 495

&lt;210&gt; 59

&lt;211&gt; 264

&lt;212&gt; PRT

&lt;213&gt; Brassica napus

&lt;400&gt; 59

Met Ala Ala Ser Phe Ser Gly Pro Ser Met Ile Met Glu Glu Glu Gly  
 1 5 10 15

Arg Phe Glu Ala Glu Val Ala Glu Val Gln Ala Trp Trp Asn Ser Glu  
 20 25 30

Arg Phe Lys Leu Thr Arg Arg Pro Tyr Thr Ala Arg Asp Val Val Ala  
 35 40 45

Leu Arg Gly Asn Leu Lys Gln Ser Tyr Ala Ser Asn Glu Leu Ala Lys  
 50 55 60

Lys Leu Trp Arg Thr Leu Lys Thr His Gln Ala Asn Gly Thr Ala Ser  
 65 70 75 80

Arg Thr Phe Gly Ala Leu Asp Pro Val Gln Val Thr Met Met Ala Lys  
 85 90 95

His Leu Asp Ser Ile Tyr Val Ser Gly Trp Gln Cys Ser Ser Thr His  
 100 105 110



Thr Thr Thr Asn Glu Pro Gly Pro Asp Leu Ala Asp Tyr Pro Tyr Asp  
115 120 125

Thr Val Pro Asn Lys Val Glu His Leu Phe Phe Ala Gln Gln Tyr His  
130 135 140

Asp Arg Lys Gln Arg Glu Ala Arg Met Ser Met Ser Arg Glu Glu Arg  
145 150 155 160

Ala Arg Thr Pro Tyr Val Asp Tyr Leu Lys Pro Ile Ile Ala Asp Gly  
165 170 175

Asp Thr Gly Phe Gly Gly Thr Thr Ala Thr Val Lys Leu Cys Lys Leu  
180 185 190

Phe Val Glu Arg Gly Ala Ala Gly Val His Ile Glu Asp Gln Ser Ser  
195 200 205

Val Thr Lys Lys Cys Gly His Met Ala Gly Lys Val Leu Val Ala Ile  
210 215 220

Ser Glu His Ile Asn Arg Leu Val Ala Ala Arg Leu Gln Phe Asp Val  
225 230 235 240

Met Gly Val Glu Thr Leu Leu Val Ala Arg Thr Asp Ala Glu Ala Ala  
245 250 255

Asn Leu Ile Gln Ser Asn Val Asp  
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<210> 60

<211> 261

<212> PRT

<213> Arabidopsis thaliana

<400> 60

Met Ile Asp Lys Pro Asn Gln Ile Met Glu Glu Glu Gly Arg Phe Glu  
1 5 10 15

Ala Glu Val Ala Glu Val Gln Thr Trp Trp Ser Ser Glu Arg Phe Lys  
20 25 30

Leu Thr Arg Arg Pro Tyr Thr Ala Arg Asp Val Val Ala Leu Arg Gly  
35 40 45

His Leu Lys Gln Gly Tyr Ala Ser Asn Glu Met Ala Lys Lys Leu Trp  
50 55 60

Arg Thr Leu Lys Ser His Gln Ala Asn Gly Thr Ala Ser Arg Thr Phe  
65 70 75 80

Gly Ala Leu Asp Pro Val Gln Val Thr Met Met Ala Lys His Leu Asp  
85 90 95

Thr Ile Tyr Val Ser Gly Trp Gln Cys Ser Ser Thr His Thr Ser Thr  
100 105 110

Asn Glu Pro Gly Pro Asp Leu Ala Asp Tyr Pro Tyr Asp Thr Val Pro  
 115 120 125  
 Asn Lys Val Glu His Leu Phe Phe Ala Gln Gln Tyr His Asp Arg Lys  
 130 135 140  
 Gln Arg Glu Ala Arg Met Ser Met Ser Arg Glu Glu Arg Thr Lys Thr  
 145 150 155 160  
 Pro Phe Val Asp Tyr Leu Lys Pro Ile Ile Ala Asp Gly Asp Thr Gly  
 165 170 175  
 Phe Gly Gly Thr Thr Ala Thr Val Lys Leu Cys Lys Leu Phe Val Glu  
 180 185 190  
 Arg Gly Ala Ala Gly Val His Ile Glu Asp Gln Ser Ser Val Thr Lys  
 195 200 205  
 Lys Cys Gly His Met Ala Gly Lys Val Leu Val Ala Val Ser Glu His  
 210 215 220  
 Ile Asn Arg Leu Val Ala Ala Arg Leu Gln Phe Asp Val Met Gly Thr  
 225 230 235 240  
 Glu Thr Val Leu Val Ala Arg Thr Asp Ala Val Ala Ala Thr Leu Ile  
 245 250 255  
 Gln Ser Asn Ile Asp  
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<210> 61  
 <211> 264  
 <212> PRT  
 <213> Ricinus communis

<400> 61  
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 20 25 30  
 Arg Phe Lys Leu Thr Arg Arg Pro Tyr Thr Ala Arg Asp Val Val Ala  
 35 40 45  
 Leu Arg Gly Asn Leu Lys Gln Ser Tyr Ala Ser Asn Glu Leu Ala Lys  
 50 55 60  
 Lys Leu Trp Arg Thr Leu Lys Thr His Gln Ala Asn Gly Thr Ala Ser  
 65 70 75 80  
 Arg Thr Phe Gly Ala Leu Asp Pro Val Gln Val Thr Met Met Ala Lys  
 85 90 95  
 His Leu Asp Ser Ile Tyr Val Ser Gly Trp Gln Cys Ser Ser Thr His  
 100 105 110

Thr Thr Thr Asn Glu Pro Gly Pro Asp Leu Ala Asp Tyr Pro Tyr Asp  
 115 120 125  
 Thr Val Pro Asn Lys Val Glu His Leu Phe Phe Ala Gln Gln Tyr His  
 130 135 140  
 Asp Arg Lys Gln Arg Glu Ala Arg Met Ser Met Ser Arg Glu Glu Arg  
 145 150 155 160  
 Ala Arg Thr Pro Tyr Val Asp Tyr Leu Lys Pro Ile Ile Ala Asp Gly  
 165 170 175  
 Asp Thr Gly Phe Gly Gly Thr Thr Ala Thr Val Lys Leu Cys Lys Leu  
 180 185 190  
 Phe Val Glu Arg Gly Ala Ala Gly Val His Ile Glu Asp Gln Ser Ser  
 195 200 205  
 Val Thr Lys Lys Cys Gly His Met Ala Gly Lys Val Leu Val Ala Ile  
 210 215 220  
 Ser Glu His Ile Asn Arg Leu Val Ala Ala Arg Leu Gln Phe Asp Val  
 225 230 235 240  
 Met Gly Val Glu Thr Leu Leu Val Ala Arg Thr Asp Ala Glu Ala Ala  
 245 250 255  
 Asn Leu Ile Gln Ser Asn Val Asp  
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<210> 62  
 <211> 264  
 <212> PRT  
 <213> Ricinus communis

<400> 62  
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 Arg Phe Glu Ala Glu Val Ala Glu Val Gln Ala Trp Trp Asn Ser Glu  
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 Arg Phe Lys Leu Thr Arg Arg Pro Tyr Thr Ala Arg Asp Val Val Ala  
 35 40 45  
 Leu Arg Gly Asn Leu Lys Gln Ser Tyr Ala Ser Asn Glu Leu Ala Lys  
 50 55 60  
 Lys Leu Trp Arg Thr Leu Lys Thr His Gln Ala Asn Gly Thr Ala Ser  
 65 70 75 80  
 Arg Thr Phe Gly Ala Leu Asp Pro Val Gln Val Thr Met Met Ala Lys  
 85 90 95  
 His Leu Asp Ser Ile Tyr Val Ser Gly Trp Gln Cys Ser Ser Thr His  
 100 105 110

Thr Thr Thr Asn Glu Pro Gly Pro Asp Leu Ala Asp Tyr Pro Tyr Asp  
 115 120 125  
 Thr Val Pro Asn Lys Val Glu His Leu Phe Phe Ala Gln Gln Tyr His  
 130 135 140  
 Asp Arg Lys Gln Arg Glu Ala Arg Met Ser Met Ser Arg Glu Glu Arg  
 145 150 155 160  
 Ala Arg Thr Pro Tyr Val Asp Tyr Leu Lys Pro Ile Ile Ala Asp Gly  
 165 170 175  
 Asp Thr Gly Phe Gly Gly Thr Thr Ala Thr Val Lys Leu Cys Lys Leu  
 180 185 190  
 Phe Val Glu Arg Gly Ala Ala Gly Val His Ile Glu Asp Gln Ser Ser  
 195 200 205  
 Val Thr Lys Lys Cys Gly His Met Ala Gly Lys Val Leu Val Ala Ile  
 210 215 220  
 Ser Glu His Ile Asn Arg Leu Val Ala Ala Arg Leu Gln Phe Asp Val  
 225 230 235 240  
 Met Gly Val Glu Thr Leu Leu Val Ala Arg Thr Asp Ala Glu Ala Ala  
 245 250 255  
 Asn Leu Ile Gln Ser Asn Val Asp  
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<210> 63  
 <211> 246  
 <212> PRT  
 <213> Glycine max

<400> 63  
 Glu Ala Glu Val Ala Glu Val Gln Ala Trp Trp Asn Ser Glu Arg Phe  
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 Arg Leu Thr Lys Arg Pro Tyr Thr Ala Arg Asp Val Val Ser Leu Arg  
 20 25 30  
 Gly Asn Leu Arg Gln Thr Tyr Ala Ser Asn Glu Met Ala Lys Lys Leu  
 35 40 45  
 Trp Cys Leu Leu Lys Asn His Gln Ala Asn Gly Thr Ala Ser Arg Thr  
 50 55 60  
 Phe Gly Ala Leu Asp Pro Val Gln Val Thr Gln Met Ala Lys His Leu  
 65 70 75 80  
 Asp Thr Ile Tyr Val Ser Gly Trp Gln Cys Ser Ala Thr His Thr Thr  
 85 90 95  
 Ser Asn Glu Pro Gly Pro Asp Leu Ala Asp Tyr Pro Tyr Asp Thr Val  
 100 105 110

Pro Asn Lys Val Glu His Leu Phe Phe Ala Gln Gln Tyr His Asp Arg  
 115 120 125  
 Lys Gln Arg Glu Glu Arg Met Arg Met Ser Arg Glu Glu Arg Ala Arg  
 130 135 140  
 Thr Pro Tyr Val Asp Tyr Leu Arg Pro Ile Ile Ala Asp Gly Asp Thr  
 145 150 155 160  
 Gly Phe Gly Gly Thr Thr Ala Thr Val Lys Leu Cys Lys Leu Phe Val  
 165 170 175  
 Glu Arg Gly Ala Ala Gly Ile His Ile Glu Asp Gln Ser Ser Val Thr  
 180 185 190  
 Lys Lys Cys Gly His Met Ala Gly Lys Val Leu Val Ala Ile Ser Glu  
 195 200 205  
 His Ile Asn Arg Leu Val Ala Ala Arg Leu Gln Phe Asp Val Met Gly  
 210 215 220  
 Val Glu Thr Val Leu Val Ala Arg Thr Asp Ala Glu Ala Ala Asn Leu  
 225 230 235 240  
 Ile Gln Ser Asn Ile Asp  
 245

<210> 64  
 <211> 264  
 <212> PRT  
 <213> Cucurbita sp.

<400> 64  
 Met Ala Thr Ser Phe Ser Val Pro Ser Met Ile Met Glu Glu Glu Gly  
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 35 40 45  
 Leu Arg Gly Ser Leu Arg Gln Ser Tyr Ala Ser Asn Asp Leu Ala Lys  
 50 55 60  
 Lys Leu Trp Arg Thr Leu Lys Thr His Gln Ala Asn Ser Thr Ala Ser  
 65 70 75 80  
 Arg Thr Phe Gly Ala Leu Asp Pro Val Gln Val Thr Met Met Ala Lys  
 85 90 95  
 His Leu Asp Ser Ile Tyr Val Ser Gly Trp Gln Cys Ser Ser Thr His  
 100 105 110  
 Thr Ser Thr Asn Glu Pro Gly Pro Asp Leu Ala Asp Tyr Pro Tyr Asp  
 115 120 125

Thr Val Pro Asn Lys Val Glu His Leu Phe Phe Ala Gln Gln Tyr His  
 130 135 140  
 Asp Arg Lys Gln Arg Glu Ala Arg Met Ser Met Ser Arg Glu Glu Arg  
 145 150 155 160  
 Ala Lys Thr Pro Tyr Val Asp Tyr Leu Lys Pro Ile Ile Ala Asp Gly  
 165 170 175  
 Asp Thr Gly Phe Gly Gly Thr Thr Ala Thr Val Lys Leu Cys Lys Leu  
 180 185 190  
 Phe Val Glu Arg Gly Ala Ala Gly Val His Ile Glu Asp Gln Ser Ser  
 195 200 205  
 Val Thr Lys Lys Cys Gly His Met Ala Gly Lys Val Leu Val Ala Val  
 210 215 220  
 Ser Glu His Ile Asn Arg Leu Val Ala Ala Arg Leu Gln Phe Asp Val  
 225 230 235 240  
 Met Gly Val Glu Thr Val Leu Val Ala Arg Thr Asp Ala Val Ala Ala  
 245 250 255  
 Thr Leu Ile Gln Thr Asn Val Asp  
 260

<210> 65  
 <211> 266  
 <212> PRT  
 <213> Pinus taeda

<400> 65  
 Met Ala Ile Tyr Ser Ala Gln Ala Pro Asn Ser Ile Leu Glu Glu Glu  
 1 5 10 15  
 Ala Arg Phe Glu Ala Glu Val Ser Glu Thr Gln Ala Trp Trp Asn Ser  
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 Thr Asp Leu Phe Arg Leu Thr Arg Arg Pro Tyr Thr Ala Arg Asp Val  
 35 40 45  
 Val Arg Leu Arg Gly Ser Met Arg Gln Ser Tyr Ala Ser Asn Glu Met  
 50 55 60  
 Ala Lys Lys Leu Trp Arg Thr Leu Lys Thr His Gln Ala Asn Lys Thr  
 65 70 75 80  
 Ala Ser Arg Thr Phe Gly Ala Leu Asp Pro Val Gln Val Ser Met Met  
 85 90 95  
 Ala Lys Tyr Leu Asp Ser Ile Tyr Val Ser Gly Trp Gln Cys Ser Ser  
 100 105 110  
 Thr His Thr Thr Thr Asn Glu Pro Gly Pro Asp Leu Ala Asp Tyr Pro  
 115 120 125

Tyr Asp Thr Val Pro Asn Lys Val Glu His Leu Phe Phe Ala Gln Gln  
 130 135 140

Phe His Asp Arg Lys Gln Lys Glu Ala Arg Met Ser Met Thr Arg Glu  
 145 150 155 160

Glu Arg Ser Lys Thr Pro Tyr Ile Asp Tyr Leu Lys Pro Ile Ile Ala  
 165 170 175

Asp Gly Asp Thr Gly Phe Gly Gly Ala Thr Ala Thr Val Lys Leu Cys  
 180 185 190

Lys Leu Phe Val Glu Arg Gly Ala Ala Gly Val His Ile Glu Asp Gln  
 195 200 205

Ala Ser Val Thr Lys Lys Cys Gly His Met Ala Gly Lys Val Leu Val  
 210 215 220

Ser Val Gly Glu His Val Asn Arg Met Val Ala Ala Arg Leu Gln Phe  
 225 230 235 240

Asp Ile Met Gly Val Glu Thr Leu Leu Val Ala Arg Thr Asp Ala Val  
 245 250 255

Ala Ala Thr Leu Ile Gln Thr Asn Val Asp  
 260 265

<210> 66

<211> 266

<212> PRT

<213> Neurospora crassa

<400> 66

Met Ala Ala Asn Asn Met Val Asn Pro Ala Val Asp Pro Ala Leu Glu  
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Asp Glu Leu Phe Ala Lys Glu Val Glu Glu Val Lys Lys Trp Trp Ser  
 20 25 30

Asp Ser Arg Trp Arg Gln Thr Lys Arg Pro Phe Thr Ala Glu Gln Ile  
 35 40 45

Val Ser Lys Arg Gly Asn Leu Lys Ile Glu Tyr Ala Ser Asn Ala Gln  
 50 55 60

Ala Lys Lys Leu Trp Lys Ile Leu Glu Asp Arg Phe Ala Lys Arg Asp  
 65 70 75 80

Ala Ser Tyr Thr Tyr Gly Cys Leu Glu Pro Thr Met Val Thr Gln Met  
 85 90 95

Ala Lys Tyr Leu Asp Thr Val Tyr Val Ser Gly Trp Gln Ser Ser Ser  
 100 105 110

Thr Ala Ser Ser Ser Asp Glu Pro Gly Pro Asp Leu Ala Asp Tyr Pro  
 115 120 125

Tyr Thr Thr Cys Pro Asn Lys Val Gly His Leu Phe Met Ala Gln Leu  
 130 135 140

Phe His Asp Arg Lys Gln Arg Gln Glu Arg Leu Ser Val Pro Lys Asp  
 145 150 155 160

Gln Arg Glu Lys Leu Ala Asn Ile Asp Tyr Leu Arg Pro Ile Val Ala  
 165 170 175

Asp Ala Asp Thr Gly His Gly Gly Leu Thr Ala Val Met Lys Leu Thr  
 180 185 190

Lys Leu Phe Ile Glu Lys Gly Ala Ala Gly Ile His Ile Glu Asp Gln  
 195 200 205

Ala Pro Gly Thr Lys Lys Cys Gly His Met Ala Gly Lys Val Leu Val  
 210 215 220

Pro Ile Gln Glu His Ile Asn Arg Leu Val Ala Ile Arg Ala Gln Ala  
 225 230 235 240

Asp Ile Met Gly Ser Asp Leu Leu Cys Ile Ala Arg Thr Asp Ala Glu  
 245 250 255

Ala Ala Thr Leu Ile Thr Thr Thr Ile Asp  
 260 265

<210> 67

<211> 254

<212> PRT

<213> Coprinus cinereus

<400> 67

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Arg Trp Trp Lys Ser Pro Arg Phe Ala Arg Val Asn Arg Pro Tyr Thr  
 20 25 30

Ala Ala Asp Val Val Ser Lys Arg Gly Thr Ile Lys Ile Asn Tyr Pro  
 35 40 45

Ser Asp Val Gln Gly Lys Lys Leu Trp Lys Leu Leu Ser Glu His Ala  
 50 55 60

Lys Asn Gly Thr Pro Ser His Thr Tyr Gly Ala Leu Asp Pro Val Gln  
 65 70 75 80

Val Thr Lys Met Ala Lys Tyr Leu Glu Thr Val Tyr Val Ser Gly Trp  
 85 90 95

Gln Ser Ser Ser Thr Ala Ser Ser Ser Asn Glu Pro Gly Pro Asp Leu  
 100 105 110

Ala Asp Tyr Pro Ser Asn Thr Val Pro Asn Lys Val Glu His Leu Phe  
 115 120 125



Met Ala Gln Leu Phe His Asp Arg Lys Gln Arg Glu Ala Arg Ser Arg  
 130 135 140

Met Ser Asp Ala Glu Leu Ala Asn Thr Pro Val Ile Asp Tyr Leu Arg  
 145 150 155 160

Pro Ile Val Ala Asp Ala Asp Thr Gly His Gly Gly Leu Thr Ala Val  
 165 170 175

Met Lys Leu Thr Lys Met Phe Val Glu Lys Gly Ala Ala Gly Ile His  
 180 185 190

Ile Glu Asp Gln Ala Pro Gly Thr Lys Lys Cys Gly His Met Ala Gly  
 195 200 205

Lys Val Leu Val Pro Ile Gln Glu His Ile Asn Arg Leu Val Ala Ile  
 210 215 220

Arg Leu Gln Tyr Asp Ile Met Gly Val Glu Asn Leu Val Val Ala Arg  
 225 230 235 240

Thr Asp Ser Glu Ala Ala Thr Leu Ile Thr Ser Asn Ile Asp  
 245 250

<210> 68

<211> 246

<212> PRT

<213> Escherichia coli

<400> 68

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Val Lys Leu Arg Gly Ser Val Asn Pro Glu Cys Thr Leu Ala Gln Leu  
 35 40 45

Gly Ala Ala Lys Met Trp Arg Leu Leu His Gly Glu Ser Lys Lys Gly  
 50 55 60

Tyr Ile Asn Ser Leu Gly Ala Leu Thr Gly Gly Gln Ala Leu Gln Gln  
 65 70 75 80

Ala Lys Ala Gly Ile Glu Ala Val Tyr Leu Ser Gly Trp Gln Val Ala  
 85 90 95

Ala Asp Ala Asn Leu Ala Ala Ser Met Tyr Pro Asp Gln Ser Leu Tyr  
 100 105 110

Pro Ala Asn Ser Val Pro Ala Val Val Glu Arg Ile Asn Asn Thr Phe  
 115 120 125

Arg Arg Ala Asp Gln Ile Gln Trp Ser Ala Gly Ile Glu Pro Gly Asp  
 130 135 140

Pro Arg Tyr Val Asp Tyr Phe Leu Pro Ile Val Ala Asp Ala Glu Ala  
 145 150 155 160  
 Gly Phe Gly Gly Val Leu Asn Ala Phe Glu Leu Met Lys Ala Met Ile  
 165 170 175  
 Glu Ala Gly Ala Ala Ala Val His Phe Glu Asp Gln Leu Ala Ser Val  
 180 185 190  
 Lys Lys Cys Gly His Met Gly Gly Lys Val Leu Val Pro Thr Gln Glu  
 195 200 205  
 Ala Ile Gln Lys Leu Val Ala Ala Arg Leu Ala Ala Asp Val Thr Gly  
 210 215 220  
 Val Pro Thr Leu Leu Val Ala Arg Thr Asp Ala Asp Ala Ala Asp Leu  
 225 230 235 240  
 Ile Thr Ser Asp Cys Asp  
 245

<210> 69  
 <211> 228  
 <212> PRT  
 <213> *Toxoplasma gondii*

<400> 69  
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 Leu Pro Arg Arg Leu Pro Val Leu Val Ser Ala Phe Arg Leu Thr Thr  
 35 40 45  
 Ser Leu His Ser His Ser Met Ala Ser Arg Ala Pro His Ala Gly Gln  
 50 55 60  
 Arg Leu Arg Ser Leu Met Gln Lys Lys Cys Val Met Leu Pro Gly Ala  
 65 70 75 80  
 Tyr Asn Gly Leu Thr Ala Arg Leu Ala Ala Glu Ala Gly Phe Glu Gly  
 85 90 95  
 Val Tyr Val Ser Gly Ala Ala Leu Ser Ala Cys Gln Gly Val Pro Asp  
 100 105 110  
 Ile Gly Ile Leu Gly Leu Glu Asp Phe Thr Arg Val Ile Ser Gln Ala  
 115 120 125  
 Ala Ser Val Thr Ser Leu Pro Val Leu Ala Asp Ala Asp Thr Gly Phe  
 130 135 140  
 Gly Gly Pro Glu Met Val Arg Arg Thr Val Phe Ala Tyr Asn Gln Ala  
 145 150 155 160

Gly Ala Ala Gly Leu His Ile Glu Asp Gln Arg Leu Pro Lys Lys Cys  
 165 170 175  
 Gly His Leu Glu Gly Lys Gln Leu Val Ser Ile Glu Glu Met Glu Glu  
 180 185 190  
 Lys Ile Lys Ala Ala Ala Ala Ala Ser Gln Asp Cys Ser Asn Gly Asp  
 195 200 205  
 Phe Ile Ile Cys Ala Arg Thr Asp Ala Arg Ser Val Asp Gly Leu Asp  
 210 215 220  
 Ala Ala Val Glu  
 225

<210> 70  
 <211> 100  
 <212> PRT  
 <213> *Saccharomyces cerevisiae*

<400> 70  
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 Gly Ile His Met Glu Asp Gln Thr Ser Thr Asn Lys Lys Cys Gly His  
 35 40 45  
 Met Ala Gly Arg Cys Val Ile Pro Val Gln Glu His Val Asn Arg Leu  
 50 55 60  
 Val Thr Ile Arg Met Cys Ala Asp Ile Met His Ser Asp Leu Ile Val  
 65 70 75 80  
 Val Ala Arg Thr Asp Ser Glu Ala Ala Thr Leu Ile Ser Ser Thr Ile  
 85 90 95  
 Asp Thr Arg Asp  
 100

<210> 71  
 <211> 100  
 <212> PRT  
 <213> *Saccharomyces cerevisiae*

<400> 71  
 Phe Leu Arg Pro Ile Ile Ala Asp Ala Asp Thr Gly His Gly Gly Ile  
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 Thr Ala Ile Ile Lys Leu Thr Lys Leu Phe Ile Glu Arg Gly Ala Ala  
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 Gly Ile His Ile Glu Asp Gln Ala Pro Gly Thr Lys Lys Cys Gly His  
 35 40 45

Met Ala Gly Lys Val Leu Val Pro Val Gln Glu His Ile Asn Arg Leu  
 50 55 60  
 Val Ala Ile Arg Ala Ser Ala Asp Ile Phe Gly Ser Asn Leu Leu Ala  
 65 70 75 80  
 Val Ala Arg Thr Asp Ser Glu Ala Ala Thr Leu Ile Thr Ser Thr Ile  
 85 90 95  
 Asp His Arg Asp  
 100

<210> 72  
 <211> 100  
 <212> PRT  
 <213> *Saccharomyces cerevisiae*

<400> 72  
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 20 25 30  
 Gly Ile His Leu Glu Asp Gln Met Val Gly Gly Lys Arg Cys Gly His  
 35 40 45  
 Leu Ser Gly Ala Val Leu Val Pro Thr Ala Thr His Leu Met Arg Leu  
 50 55 60  
 Ile Ser Thr Arg Phe Gln Trp Asp Ile Met Gly Thr Glu Asn Leu Val  
 65 70 75 80  
 Ile Ala Arg Thr Asp Ser Cys Asn Gly Lys Leu Leu Ser Ser Ser Ser  
 85 90 95  
 Asp Pro Arg Asp  
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<210> 73  
 <211> 7141  
 <212> DNA  
 <213> *Toxoplasma gondii*

<400> 73  
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7141

&lt;210&gt; 74

&lt;211&gt; 489

&lt;212&gt; PRT

&lt;213&gt; Toxoplasma gondii

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 20 25 30  
 Glu Phe Val Val Met Ala Thr Pro Glu Asp Met Arg Ala Asn Pro Glu  
 35 40 45  
 Phe Ile Arg Arg Ala Asp Lys Ile Val Glu Val Pro Gly Gly Pro Asn  
 50 55 60  
 Arg Asn Asn Tyr Ala Asn Val Asp Leu Ile Cys Gln Ile Ala Val Gln  
 65 70 75 80  
 Glu Lys Val Asp Ala Val Trp Pro Gly Trp Gly His Ala Ser Glu Asn  
 85 90 95  
 Pro Asn Leu Pro Arg Arg Leu Ser Glu Leu Gly Ile Thr Phe Ile Gly  
 100 105 110  
 Pro Ser Ala Thr Val Met Ala Ala Leu Gly Asp Lys Ile Ala Ala Asn  
 115 120 125  
 Ile Leu Ala Gln Thr Ala Gly Val Pro Ser Ile Pro Trp Ser Gly Asp  
 130 135 140  
 Ser Leu Lys Ala Thr Leu Asp Ser Thr Gly Ala Ile Pro Arg Asp Ile  
 145 150 155 160  
 Phe Asp Gln Ala Thr Val Lys Ser Val Glu Glu Cys Glu Lys Val Ala  
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 Gly Lys Gly Ile Arg Met Val Asp Arg Lys Glu Gln Val Arg Gly Ala  
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 225 230 235 240  
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 245 250 255  
 Arg Arg Phe Gln Lys Ile Phe Glu Glu Ala Pro Pro Thr Thr Val Val  
 260 265 270  
 Pro Pro His Thr Met Lys Glu Met Glu Lys Ala Ala Gln Arg Leu Thr  
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Arg Lys Asp Asp Lys Phe Phe Phe Leu Glu Leu Asn Pro Arg Leu Gln  
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 325 330 335  
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 340 345 350  
 Ile Arg Arg Phe Phe Gly Arg Asp Pro Asn Ala Gly Asp Arg Ile Asp  
 355 360 365  
 Phe Ile Asn Glu Asp Tyr Leu Pro Ile Gln Arg His Val Leu Ala Ser  
 370 375 380  
 Arg Val Thr Ala Glu Asn Pro Asp Glu Gly Phe Lys Pro Thr Ser Gly  
 385 390 395 400  
 Arg Val Asp Arg Leu Glu Phe Gln Pro Leu Glu Asn Val Trp Gly Tyr  
 405 410 415  
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 420 425 430  
 Phe Gly His Ile Phe Ala Thr Gly Lys Asn Arg Glu Glu Ala Arg Lys  
 435 440 445  
 Lys Leu Val Leu Gly Leu Lys Arg Val Asp Val Arg Gly Glu Ile Arg  
 450 455 460  
 Thr Pro Ile Glu Tyr Leu Val Gln Leu Leu Glu Asp Lys Asp Phe Ile  
 465 470 475 480  
 Glu Asn Arg Ile Asp Thr Ser Trp Leu  
 485

&lt;210&gt; 75

&lt;211&gt; 5258

&lt;212&gt; DNA

<213> *Toxoplasma gondii*

&lt;400&gt; 75

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&lt;212&gt; PRT

<213> *Toxoplasma gondii*

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Val Ala Asn Glu Thr His Thr Thr Trp Leu  
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<210> 77

<211> 6965

<212> DNA

<213> *Toxoplasma gondii*

<400> 77

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<210> 78

<211> 131

<212> PRT

<213> *Cryptosporidium parvum*

<400> 78

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Gln Val Phe Val Met Arg Ala Val Asn Lys Cys Arg His Leu Glu Val
      35             40             45
Gln Val Leu Gly Asp Lys Tyr Gly Asp Val Phe Ala Leu Ser Thr Arg
      50             55             60
Asp Cys Thr Ile Gln Arg Arg His Gln Lys Val Ile Glu Glu Gly Pro
      65             70             75             80
Val Thr Ile Val Ser Gln Glu Ile Val Lys Glu Leu Glu Leu Ser Ala
      85             90             95
Glu Arg Met Cys Lys Ala Val Gly Tyr Ser Ser Ala Gly Thr Val Glu
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Phe Leu Tyr Asp Ile Glu Arg Ser Cys Ile Ala Phe Leu Glu Val Asn
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Ala Arg Leu
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<210> 79

<211> 393

<212> DNA

<213> *Cryptosporidium parvum*

<400> 79

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<213> Plasmodium falciparum

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 35 40 45

Gln Val Val Gly Asp Met Tyr Gly Asn Val Cys Ser Leu Ser Gly Arg  
 50 55 60

Asp Cys Thr Thr Gln Arg Arg Phe Gln Lys Ile Phe Glu Glu Gly Pro  
 65 70 75 80

Pro Ser Val Val Pro Tyr Pro Ile Phe Arg Glu Met Glu Lys Ser Ser  
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Ile Arg Leu Thr Lys Met Ile Lys Tyr Arg Gly Ala Gly Thr Ile Glu  
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Tyr Leu Tyr Asp Gln Ile Asn Lys Lys Tyr Phe Phe Leu Glu Leu Asn  
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Pro Arg Leu  
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<210> 81

<211> 393

<212> DNA

<213> Plasmodium falciparum

<400> 81

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 aataatgtaa gacatattga aatacaagtt gttggtgata tgtatggaaa tgtgtgttct 180  
 ttaagtggtc gtgattgtac tacacaaaga agatttcaaa aaatttttga agaaggacca 240  
 ccatctgttg taccatatcc tatatttcga gaaatggaaa aatcatctat acgattaact 300  
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 aaatattttt tcttagaatt aaatccaaga tta 393

<210> 82

<211> 131

&lt;212&gt; PRT

&lt;213&gt; Plasmodium knowlesi

&lt;400&gt; 82

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Glu Ile Lys Lys Ala Tyr Thr Gln Val Gln Met Glu Leu Pro Asn Ser  
 20 25 30

Pro Ile Phe Leu Met Lys Val Cys Ser Asn Val Arg His Ile Glu Ile  
 35 40 45

Gln Val Val Gly Asp Met Tyr Gly Asn Val Cys Ser Leu Ser Gly Arg  
 50 55 60

Asp Cys Thr Thr Gln Arg Arg Phe Gln Lys Ile Phe Glu Glu Gly Pro  
 65 70 75 80

Pro Ser Val Val Pro Pro Asn Ile Phe Arg Glu Met Glu Lys Ala Ser  
 85 90 95

Ile Arg Leu Thr Lys Met Ile Lys Tyr Arg Gly Ala Gly Thr Ile Glu  
 100 105 110

Tyr Leu Tyr Asp Gln Glu Lys Gln Thr Tyr Phe Phe Leu Glu Leu Asn  
 115 120 125

Pro Arg Leu  
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&lt;210&gt; 83

&lt;211&gt; 393

&lt;212&gt; DNA

&lt;213&gt; Plasmodium knowlesi

&lt;400&gt; 83

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